

C.1 INTRODUCTION

C.1.1 Objectives

This Statement of Work (SOW) defines the requirements for the project known as the Silo 3 Project at the United States Department of Energy (DOE) Fernald Environmental Management Project (FEMP) in Fernald, Ohio, approximately 18 miles northwest of Cincinnati, Ohio (Figure C.1-1).

The overall objective for the Silo 3 Project is the safe retrieval, stabilization/solidification and the off-site disposal of the present inventory of the Operable Unit (OU) 4 Silo 3 material by a process that provides the greatest value to the Government through private sector services. The stabilization/solidification of the Silo 3 material may be performed either on-site at the FEMP, or off-site at a Nuclear Regulatory Commission (NRC) or Agreement State licensed facility. The services shall include:

- Design, construction, start-up, operation, maintenance, shutdown and dismantlement of any treatment facilities to meet the requirements specified herein;
- Remove, treat, package, and interim staging of the Silo 3 material to meet the requirements specified herein;
- Gross decontamination of the Silo 3 interior;
- Minimize final volume of waste generated for disposal and life-cycle cost to DOE; and
- Perform the work in a safe and environmentally-compliant manner.

Fluor Daniel Fernald (FDF) will be responsible for the shipment of the packaged treated waste to the final disposal facility after the Contractor has verified, with concurrence from FDF, that the treated wasteform meets the Silo 3 waste acceptance criteria (WAC) (Attachment J.4.4). The Contractor shall be responsible for the container integrity and the acceptance of the treated wasteform by the disposal facility.

C.1.2 Project Approach

Sections C.1 through C.8 identify the requirements for performing the removal, on-site stabilization, packaging, and interim storage of the Silo 3 material at the FEMP. The requirements in Sections C.1 through C.8 also apply to that portion of the work scope involving activities performed at the FEMP (e.g., waste retrieval, pretreatment, etc.) prior to off-site stabilization of the Silo 3 material. All the requirements identified in Sections C.1 through C.8 apply to off-site treatment activities, except where otherwise noted in Section C.9, or where noted in the Contractor's technical proposal and incorporated into this contract. Section C.9 identifies the additional regulatory, technical, and administrative requirements for performing the on-site pretreatment and off-site stabilization of the Silo 3 material.

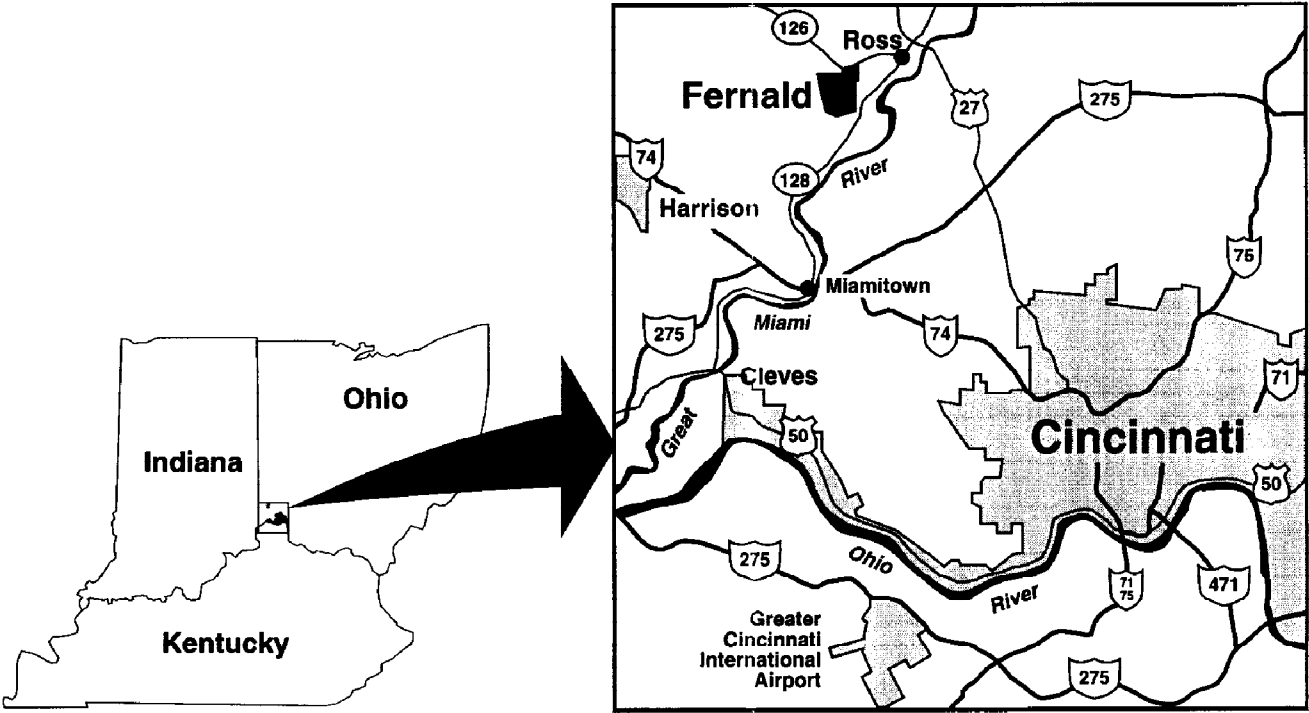


Figure C.1-1 FEMP FACILITY LOCATION MAP

The Contractor shall be responsible for the complete implementation of the retrieval and stabilization/solidification of approximately 5,100 cubic yards (yd³) of Silo 3 material and the proper management, treatment, and storage of all primary and secondary waste generated by the Contractor. The Contractor shall supply all key personnel and shall be responsible for engineering, design, equipment, specified utilities, temporary buildings and structures, supervision, training, documentation, administration, materials, tools, and appurtenances (except as otherwise specified herein) and the technical direction of FDF-supplied labor necessary to perform the work for the Silo 3 Project. Figures C.1-2 and C.1-2a present an overview of the Silo 3 Project workscope through block-flow diagrams and delineations of responsibilities and labor interface for proposals involving on-site and off-site treatment, respectively.

The Silo 3 Project is being funded with DOE-Office of Environmental Management (EM) Defense Facilities Closure Projects Program funding. The preparation and development of the requirements of this Request for Proposal (RFP) take into consideration DOE-EM programmatic objectives, planning and management directives.

C.1.2.1 Implementation of Project Approach

Implementation of the specified remediation components means that the Contractor shall design and construct new remediation facilities or modify existing remediation facilities, conduct facility testing, conduct on-site/off-site facility operations, maintenance, and complete the eventual facility shutdown and dismantlement of the on-site facilities. In addition, implementation includes other activities (such as sampling and analysis) required to meet the conditions, criteria and requirements of this SOW. Specific roles and responsibilities are detailed in this SOW.

On-site activities shall occur in the designated work zone areas established by FDF both within the OU4 boundary and the two areas identified outside the OU4 boundary. Figures C.1-3 and C.1-4 show the maximum work zones available to the Contractor and the relationship of the Silo 3 work zone areas to the adjacent OU4 area, including interface areas with other projects, and Figure C.1-5 shows general site access to the Silo 3 Project.

Figures C.1-3 and C.1-4 present the proposed allocation of land utilization for the remediation of OU4. Figure C.1-3 illustrates the proposed areas allotted to the Silo 3 Contractor with reference to existing and proposed facilities/activities. Figure C.1-4 highlights the specific work areas allocated to the Silo 3 Contractor. The layout shown for the Silo 3 work zone area is a preconceptual estimate of the Contractor's requirements to determine a footprint. These layouts are not intended to be a final determination of what the Contractor should propose, however, the Contractor must remain within the Silo 3 project boundary unless otherwise approved by FDF. The Contractor has the flexibility to arrange facilities within the space allocated. If additional space is required the Contractor shall notify FDF immediately. Availability of additional space is not guaranteed. In addition, Section C.5.2, Figures C.5-1 and C.5-2 identify other features in and around the Contractor's work area, such as site access points and utility tie-in points, which are discussed later in this SOW.

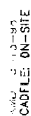
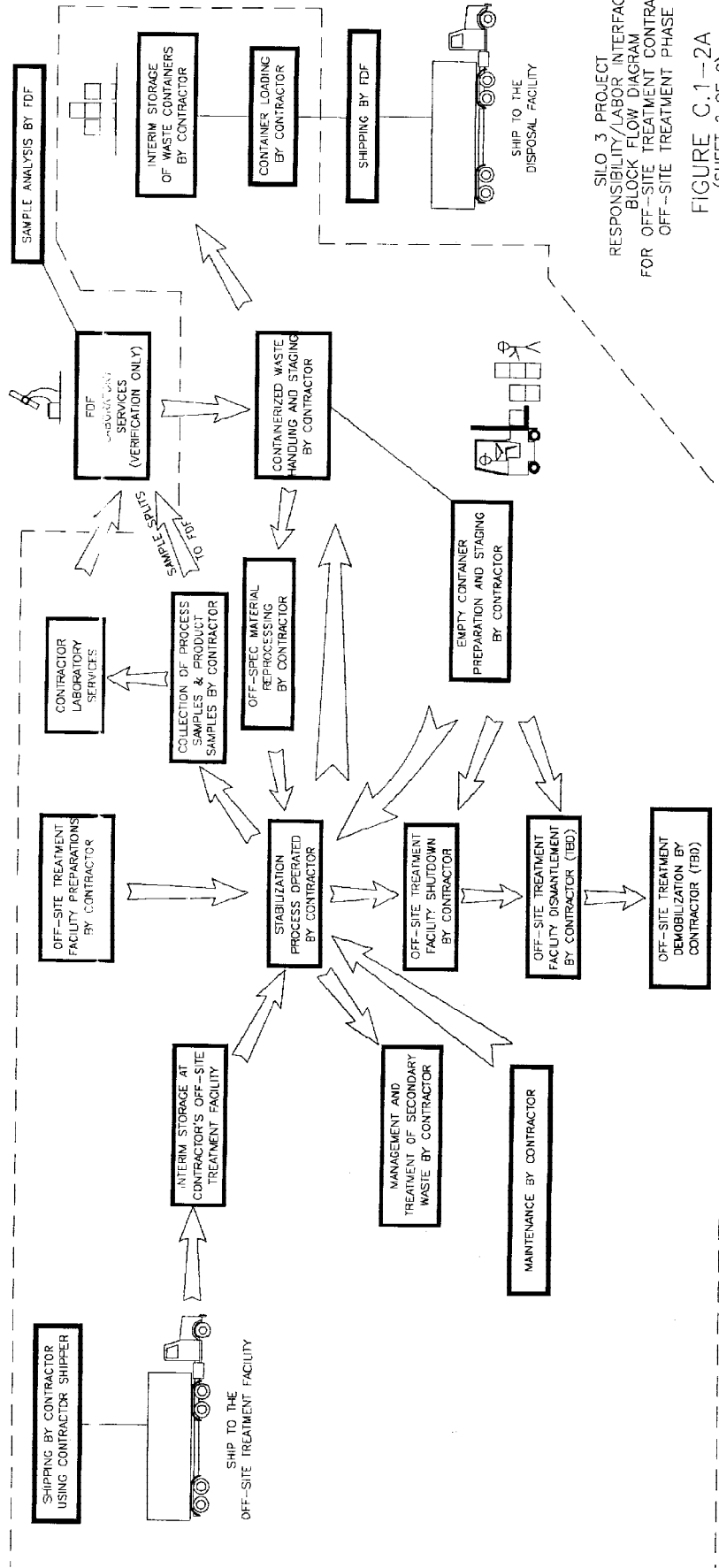
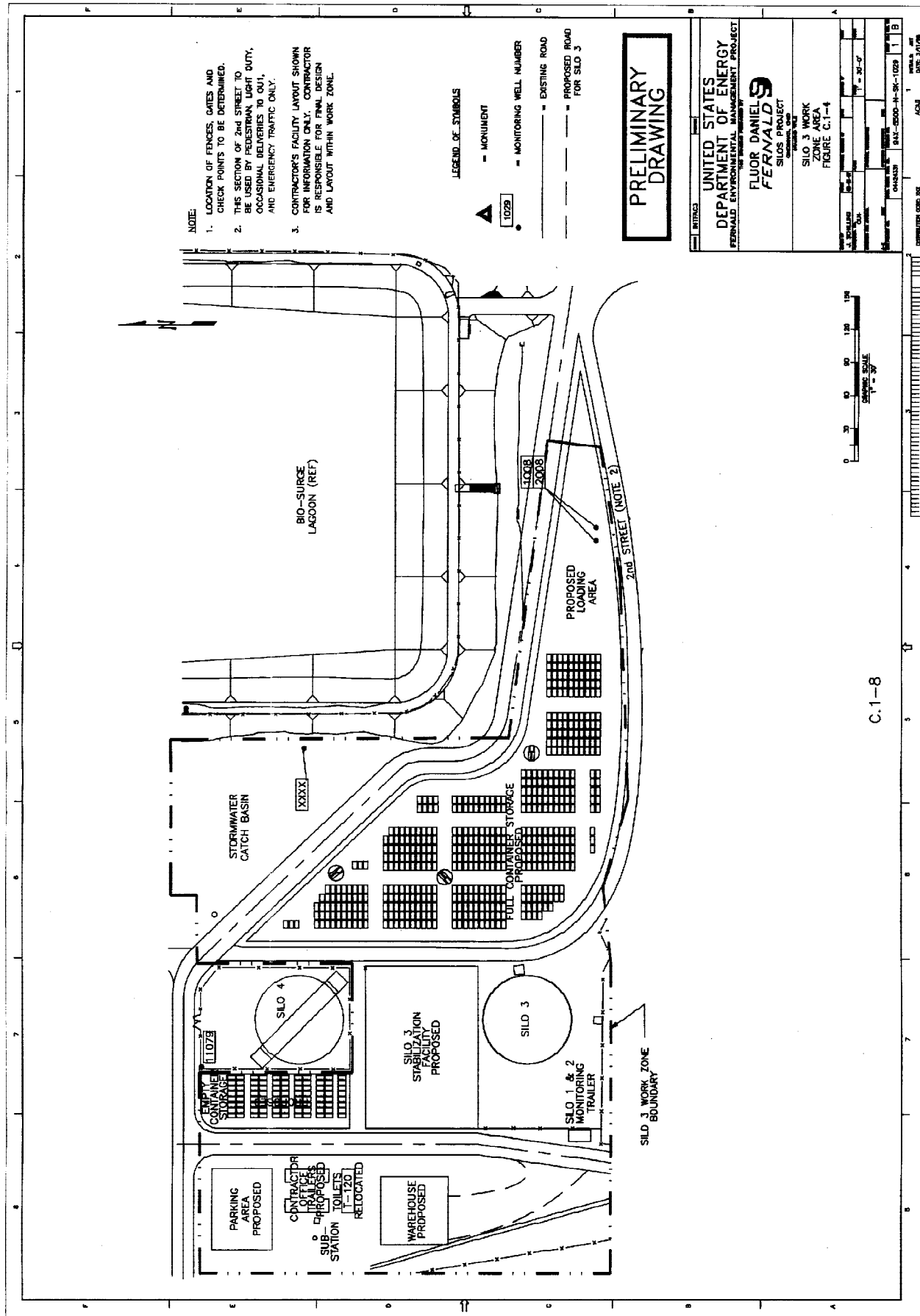


FIGURE C.1-2A
(SHEET 1 OF 2)

NOTE: ACTIVITIES ENCLOSED BY THE
DASHED LINES (— — — — —)
ARE THE RESPONSIBILITY OF THE
SILO 3 REMEDIATION CONTRACTOR.





NOTE:

1. LOCATION OF FENCES, GATES AND CHECK POINTS TO BE DETERMINED.
2. THIS SECTION OF 2nd STREET TO BE USED BY PEDESTRIAN, LIGHT DUTY, OCCASIONAL DELIVERIES TO OUT, AND EMERGENCY TRAFFIC ONLY.
3. CONTRACTOR'S FACILITY LAYOUT SHOWN FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR FINAL DESIGN AND LAYOUT WITHIN WORK ZONE.

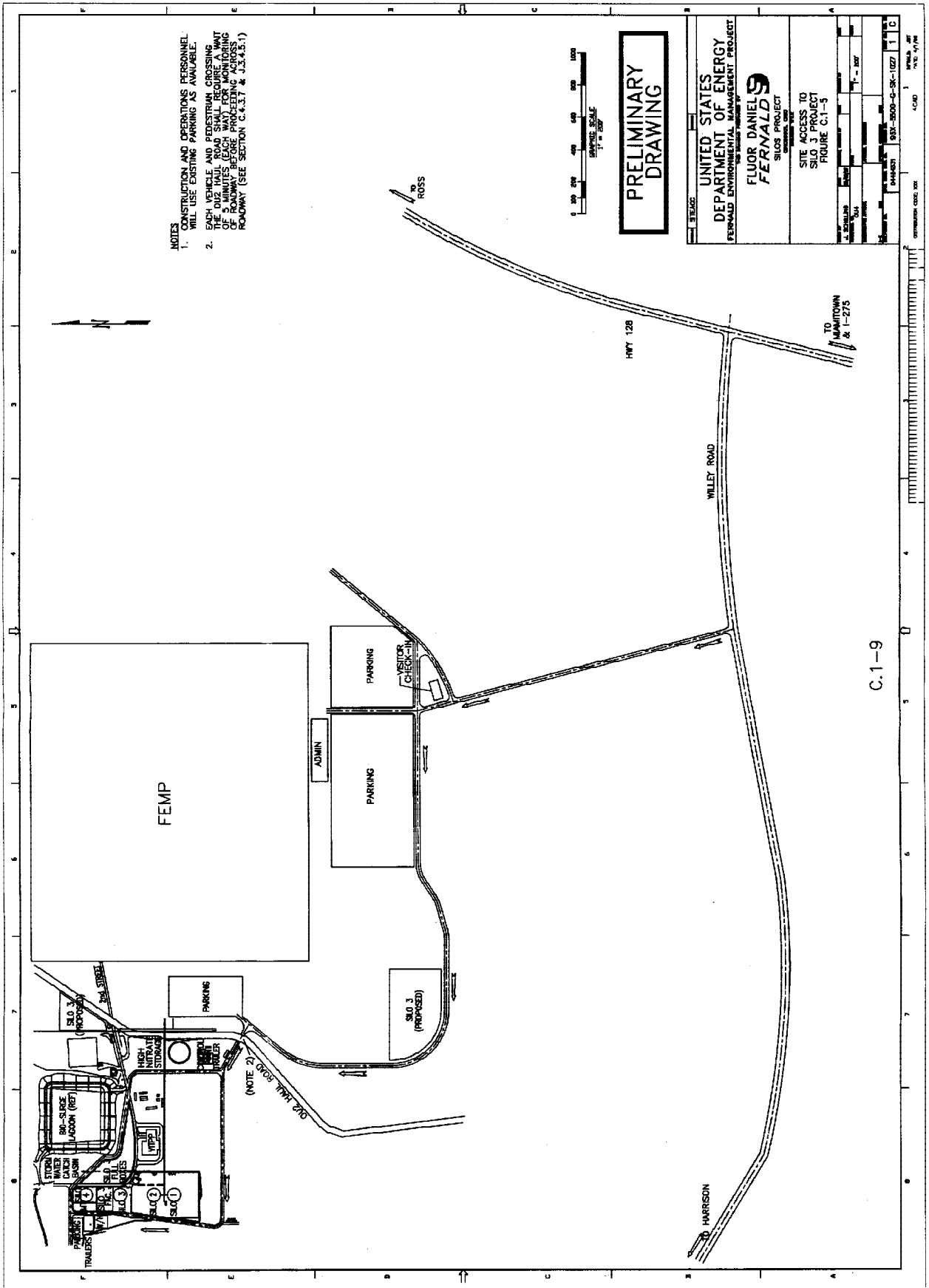
LEGEND OF SYMBOLS

- ▲ MONUMENT
- 1029 MONITORING WELL NUMBER
- EXISTING ROAD
- - - PROPOSED ROAD FOR SILO 3

**PRELIMINARY
DRAWING**

UNITED STATES DEPARTMENT OF ENERGY FERNALD ENVIRONMENTAL MANAGEMENT PROJECT	
DESIGNED BY FLUOR DANIEL FERNALD SILOS PROJECT	
SILLO 3 WORK ZONE AREA FIGURE C.1-8	
DATE: 10/1/88	SCALE: 1" = 30'-0"
PROJECT NO.: E-5000-N-SK-1023	WORK SHEET NO.: 118
DRAWN BY: J. B. KELLEY	
CHECKED BY: J. B. KELLEY	
APPROVED BY: J. B. KELLEY	
COMPLETION DATE: N/A	

C.1-8



- NOTES
1. CONSTRUCTION AND OPERATIONS PERSONNEL WILL USE EXISTING PARKING AS AVAILABLE.
 2. EACH VEHICLE AND PEDESTRIAN CROSSING THE DUTY Haul ROAD SHALL REQUIRE A WAIT OF MINIMUM 15 MINUTES BEFORE PROCEEDING ACROSS ROADWAY (SEE SECTION C.4.3.7 & J.3.4.5.1)

PRELIMINARY DRAWING

UNITED STATES DEPARTMENT OF ENERGY FERNALD ENVIRONMENTAL MANAGEMENT PROJECT THE FERNALD PROJECT FLUOR DANIEL FERNALD SILOS PROJECT	
SITE ACCESS TO SILO 3 PROJECT FIGURE C.1-3	
A. SCHEDULE B. PLAN C. ELEVATION D. SECTION E. DETAIL F. OTHER	1 2 3 4 5 6 7 8

C.1-9

All activities shall be performed in the sequence noted in the Contractor's FDF-approved schedule, and in accordance with the provisions of this SOW.

C.1.2.2 Silo 3 Remediation Overview

Personnel

The Contractor shall provide knowledgeable technical personnel with experience in environmental remediation work. FDF will review and concur with resumes for the Contractor's key personnel (Section H.16). At a minimum, the Contractor's firm, supervisory and technical support personnel shall have proven successes in prior projects of a similar nature, and have previous experience in the operation of the proposed process equipment for the stabilization/solidification of mixed, hazardous, and/or low-level radioactive waste, respectively. In addition, the Contractor's supervisory personnel shall have similar experience in the supervision of waste operations and construction activities using union personnel and at least one year of project experience on a DOE project. Removal or replacement of key personnel by the Contractor shall have prior approval by FDF.

Documentation

The Contractor shall provide the necessary calculations, documentation, design drawings, specifications, and detailed administrative procedures, to demonstrate to FDF that the facility shall be designed, constructed, operated, and maintained in accordance with all requirements for this project. The Contractor shall provide a records management system (Section C.5.1.5.4) that identifies and provides control of all calculations, design documents and drawings, controlled plans and procedures, submittal tracking, quality assurance records, change control invoicing and other program documents as required by Section C.4.7.

Construction

The Contractor may install a mobile treatment facility or construct a temporary on-site treatment facility, using labor forces of the Greater Cincinnati Building and Construction Trades Council (GCBCTC), in accordance with the FEMP labor agreement. The Contractor is not required to utilize GCBCTC labor to build mobile or prefabricated facilities and/or equipment at off-site locations. The Contractor shall construct facilities to designated tie-in points for all utilities/services identified in Section C.4.2.

Prior to mobilization and the initiation of field work, the Contractor shall support the FDF Training Department so as to provide applicable training, as required, to all its own personnel and all project-specific GCBCTC labor forces in accordance with the Occupational Safety & Health Administration (OSHA) 29 Code of Federal Regulations (CFR) Part 1910.120 and 29 CFR Part 1926, as appropriate.

Operations

The Contractor shall be responsible for the successful retrieval, stabilization/ solidification, packaging, and interim staging of all Silo 3 material and shall ensure that all treated Silo 3 waste meets the Silo 3 WAC. In addition, any secondary waste streams generated during these activities shall meet the appropriate requirements in Section C.5.1.1.3. The Contractor shall reprocess all off-specification waste and manage and treat secondary waste at its own expense.

The Contractor shall operate and maintain the waste retrieval, treatment, and support facilities and shall use FDF/Fernald Atomic Trades and Labor Council (FAT&LC) labor in performing these activities, except as otherwise noted in this contract. All FDF/FAT&LC labor requirements shall be identified in the Contractor's project Labor Relations/Workforce Utilization Plan (Section C.8).

Prior to mobilization and stabilization/solidification operations, the Contractor shall provide experienced personnel to support the FDF Training Department so as to provide applicable project-specific training for the FDF/FAT&LC personnel (Section J.3.3.3).

FDF/FAT&LC personnel will provide operations support to the Contractor's on-site activities under the direct supervision of the FDF Team Leader. All work must be performed in accordance with the FEMP labor agreements. FDF/FAT&LC personnel will perform preventative maintenance on FDF-furnished and Contractor equipment and facilities according to the Contractor's Maintenance Program (Section C.6.2.12) and will perform corrective and emergency maintenance on an as-needed basis to minimize shutdown. Emergency maintenance may be performed on off-shifts and weekends when needed to facilitate operations.

The Contractor shall notify FDF in writing, prior to initiating treatment operations, when it is ready for FDF to perform a Pre-operational Assessment (PA) (Section C.5.5). The Contractor shall implement and properly document all corrective actions taken to correct technical and administrative deficiencies identified by the PA, prior to FDF issuing the Contractor Authorization to Operate.

FDF Transportation and Disposal

At a minimum, the Contractor shall treat Silo 3 material and all secondary waste (except wastewater) to meet the Silo 3 WAC to ensure the final acceptance of all waste for disposal. Wastewater generated at the FEMP shall be treated to meet the FEMP Advanced Wastewater Treatment (AWWT) facility requirements (Section C.5.1.1.3.2). Treated Silo 3 waste that has been verified to meet the Silo 3 WAC will be removed from the Contractor's interim staging area and transferred to FDF for shipment to the disposal facility, within 45 days of receipt of the Contractor's analytical data verifying that the treated waste meets the Silo 3 WAC. FDF will be responsible for transportation and disposal of all the stabilized/solidified Silo 3 waste and specified secondary waste from the FEMP to the disposal facility.

Any treated Silo 3 waste that is determined by FDF to not meet the Silo 3 WAC shall be returned to the Contractor for reprocessing or corrective action at the Contractor's expense. This expense shall include, but not be limited to resampling and analysis, material handling, and reprocessing. FDF will support its determination through quality oversight, verification of Contractor supplied analytical data packages, and by confirmation of analytical results through independent analysis of sample splits (Section C.6.2.14). Discrepancies between FDF determination and the Contractor's analytical data packages shall be resolved prior to FDF acceptance of the treated waste for disposal.

Facility Shutdown and Dismantlement

Prior to demobilization, the Contractor shall perform Facility Shutdown and Dismantlement of the entire on-site treatment facility and equipment, including all interior and exterior appurtenances as required by the criteria identified in Section C.7. The Contractor shall

remove the process equipment, piping, and appurtenances (to identified tie-in points or as otherwise noted by FDF) using GCBCTC labor forces. The Contractor shall utilize FDF/FAT&LC personnel in the final disposition of equipment, including decontamination, surveying/monitoring, packaging, staging, and on-site transportation prior to shipment.

Facility shutdown and dismantlement activities performed at the Contractor's off-site treatment facility shall be done in accordance with Section C.9.7.2.

C.1.3 Interactions with Other Stakeholders

The contracting parties for this SOW are FDF and the Contractor. However, there are numerous other individuals, groups, and agencies that have an active interest in the remediation activities being performed at the FEMP. Only the designated FDF officials (Section H.3) have authority to provide contract direction or modification, and nothing herein shall be interpreted to authorize the Contractor to accept contractual direction or modification from any other agency, group, or individual.

The Contractor shall plan, prepare for, and participate in, periodic formal meetings and presentations with one or more of the following organizations throughout the life of this project, as part of the Comprehensive Environmental Response Compensation and Liability Act, as amended, (CERCLA) public involvement process (Section H.14.3).

DOE

DOE-FEMP involvement is essentially two-fold. The DOE OU4 Project Manager provides the overall programmatic direction to FDF for the project. DOE is the regulating authority for safety and health at the FEMP. The DOE-FEMP Facility Representatives will independently monitor and provide field safety oversight of FDF's performance of facility operations.

The Department of Energy-Ohio Field Office (DOE-OH) is the regulatory approval authority for Nuclear Safety Documentation for Hazard Category 3 and above Nuclear Facilities at the FEMP. DOE-OH may delegate that approval authority to DOE-FEMP.

FDF

FDF is responsible for oversight of the Contractor's activities under this contract, to ensure that the overall project is implemented in accordance with the OU4 Record of Decision (ROD), as modified by the Explanation of Significant Differences (ESD) and in accordance with DOE Orders and other requirements specified herein as applicable to performance of these activities.

FDF will also have direct involvement in the activities identified as being the responsibility of the Contractor. For example, FDF personnel (i.e., FAT&LC workforce and FDF Team Leaders) shall be used by the Contractor in the performance of its remediation support activities. FDF involvement will also include providing on-site radiological protection coverage for the entire Silo 3 Project, in accordance with this SOW. In addition, FDF has various responsibilities associated with the implementation of the project, some of which affect the time it takes the Contractor to perform its activities (Section C.4.1 and Table C.4-1).

It is the expectation of FDF that the Contractor shall work closely with FDF representatives to ensure compliance with the technical requirements of this contract and to minimize impact to

the Contractors of FDF's respective activities.

GCBCTC

GCBCTC personnel will also be utilized in the Silo 3 Project. The Contractor shall hire and utilize such personnel at the FEMP in accordance with the existing Project Labor Agreement (PLA) which the GCBCTC has with FDF (Attachment J.4.8).

U.S. EPA

The FEMP was included on the CERCLA National Priorities List (NPL) in 1989. Remediation of the FEMP is therefore being conducted under CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. In particular, the remedial activities at the FEMP are being conducted under an Amended Consent Agreement (ACA) between the DOE and the United States Environmental Protection Agency (U.S. EPA). Specifically, U.S. EPA Region V in Chicago, Illinois has regulatory oversight and approval authority over various project activities and deliverables, as noted in this SOW. FDF review and concurrence with the Contractor's documents is required. Specific documents will be provided and transmitted to DOE for review and approval and may be transmitted to the U.S. EPA (as required) for review and approval.

OEPA

In 1988, DOE entered into a Consent Decree with the State of Ohio that provided for the management of water pollution and hazardous wastes. This agreement was modified in 1993 by the Stipulated Amendment to the Consent Decree (SACD). The Ohio EPA (OEPA) is participating in the remediation process through direct involvement in information exchange meetings and technical review of project documents. Specifically, OEPA's Office of Federal Facilities Oversight has regulatory oversight and approval authority over various project activities and deliverables, as noted in this SOW.

OEPA is responsible for activities involving management of hazardous waste at the FEMP. Since portions of the Clean Air Act (CAA), Clean Water Act (CWA), and the Resource Conservation and Recovery Act, as amended (RCRA), with corresponding Ohio regulations governing air, water, and hazardous waste are identified as applicable or relevant and appropriate requirements (ARARs) in the OU4 ROD, OEPA has a direct interest in the Silo 3 remediation activities. For purposes of this contract, any reference to RCRA also includes the Ohio Authorized Hazardous Waste Management Program. OEPA will also review and provide comment on Contractor documents which are submitted to U.S. EPA for approval.

OEPA is also responsible for administering the FEMP National Pollutant Discharge Elimination System (NPDES) permit. As such, OEPA has inspection/enforcement authority relative to the permit as well as the NPDES required sitewide Stormwater Pollution Prevention Plan (SWPPP).

OEPA also has inspection/enforcement authority for radioactive and nonradioactive air emissions, including point source and fugitive emissions.

Other Stakeholders

Other stakeholders involved with the site activities include the Fernald Residents for Environmental, Safety and Health (FRESH), the Fernald Citizens Advisory Board (FCAB) and

the Nevada Test Site Community Advisory Board (NTSCAB). FDF and DOE keep these and other members of the public actively informed of remediation activities, including Silo 3 material remediation, primarily through periodic written and verbal updates and regularly scheduled meetings. In addition, FDF will make key decision-making documents (including most Remedial Design (RD) and Remedial Action (RA) deliverables to the EPAs) available to the public for their inspection at the time of submittal to the EPAs.

C.1.4 Background

The FEMP, formerly known as the Feed Materials Production Center (FMPC), is a 1,050-acre DOE-owned, Contractor-operated federal facility that operated from 1952 to 1989. The facility's primary function was to provide high purity uranium metal products to support United States Defense Programs. Production operations were suspended in 1989 to focus on environmental restoration and waste management activities at the facility.

The term "operable unit" is used to identify a logical grouping of environmental issues that comprise an incremental step toward comprehensively addressing site problems. OU4 is situated in the southwestern portion of the FEMP Waste Storage Area occupying an area of approximately five acres. OU4 consists of the following FEMP facilities and associated environmental media:

- Silos 1 and 2 and their contents (also termed "K-65 silos");
- Silo 3 and its contents (also termed "cold metal oxide silo");
- Silo 4 (empty);
- K-65 decant sump tank for Silos 1 and 2, its contents, and associated piping;
- Vitrification Pilot Plant (VITPP);
- A radon treatment system (RTS) for Silos 1 and 2;
- The portion of a concrete pipe trench within the boundaries of OU4, and other concrete structures;
- An earthen berm surrounding Silos 1 and 2;
- Soils beneath and immediately surrounding Silos 1, 2, 3, and 4; and
- Perched groundwater in the vicinity of the silos that may be encountered during cleanup activities.

Silo 3 contains approximately 5,100 yd³ of material which was generated at the FEMP during uranium extraction operations in the 1950s. Samples collected from Silo 3 identified the presence of significant activity and concentrations of the radionuclides within the uranium decay series, confirming prior process knowledge. The predominant radionuclide of concern identified within Silo 3 is Thorium-230 (Th-230), a radionuclide produced from the natural radioactive decay of Uranium-238 (U-238). Approximately 450 curies (Ci) of Th-230 are distributed within the Silo 3 material.

The Silo 3 material is classified as 11(e)(2) byproduct material under the Atomic Energy Act (AEA) of 1954, as amended, being material resulting from the processing of uranium ore concentrate and is specifically exempt, as defined, from regulation as solid waste under RCRA, 40 CFR Part 261.4(a)(4). Since Silo 3 material is not a solid waste, requirements under RCRA are not “applicable”, as that term is used in the NCP. The Silo 3 material does not contain any listed hazardous waste that is identified in 40 CFR Part 261.31 - 261.34.

Silo 3 material includes the following RCRA regulated metals: arsenic, cadmium, chromium, and selenium. These metals pose a potential threat to groundwater that may be used for human consumption. Tests performed on samples of the Silo 3 material indicate that the RCRA metals are leachable and that the material exceeds the toxicity characteristic limits for hazardous waste as identified in 40 CFR Part 261.24. Although the Silo 3 material is not regulated by RCRA, the Silo 3 material is considered sufficiently similar to hazardous waste under CERCLA guidelines. Therefore, some RCRA requirements are “relevant and appropriate”, as that term is used in the NCP, for the management and remediation of the material (Attachment J.4.1).

Section J.2 provides an abbreviated operational history of OU4, describing the process knowledge of how the material was generated, originally transferred to Silo 3, and the physical, chemical, and radiological characteristics of the Silo 3 material.

C.1.5 Organization of Statement of Work

This SOW is divided into the following sections:

Section C.1

Introduction - Includes a general discussion of various aspects of the project, including the location and purpose of the project, key parties involved on the project, SOW organization, and a general description of the scope of work.

Section C.2

Silo 3 Project Activities Flow Diagram - Provides a flow diagram of the Silo 3 Project from contract award to project closeout, along with a brief discussion of the flow diagram.

Section C.3

Scope of Work - Includes general and specific descriptions of the work to be performed under this project.

Section C.4

General Project Requirements - Identifies general requirements for the project such as facilities, utilities, site location, limits of construction area, Contractor deliveries, work hours, scheduling, submittals, and meetings.

Section C.5

Pre-operational Phase Technical Requirements - Identifies the technical requirements and deliverables associated with design, site preparation, construction, training, procedures development, pre-operational assessment, and start-up of the Contractor's remediation facilities, as well as requirements relative to environmental control, and health and safety specific to these activities.

Section C.6

Operational Phase Technical Requirements - Identifies the technical requirements and deliverables associated with the operation and maintenance of the remediation facilities, as well as requirements relative to environmental controls, material management, secondary waste, sampling and analysis, and shutdown.

Section C.7

Facility Shutdown, Dismantlement, and Demobilization - Identifies the technical requirements and deliverables associated with the facility shutdown and dismantlement of the Contractor's remediation facilities and equipment and requirements for demobilization activities.

Section C.8

Labor - Identifies incorporation of FDF wage employees into the Silo 3 Project.

Section C.9

Off-site Treatment Requirements - Identifies the additional regulatory, technical, and administrative requirements for performing the on-site pretreatment and off-site stabilization/solidification of the Silo 3 material.

(END OF PAGE)